Climate Change and Human Health Literature Portal

National Institute of Environmental Health Sciences

Multisectoral climate impact hotspots in a warming world

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Abstract:

The impacts of global climate change on different aspects of humanity's diverse life-support systems are complex and often difficult to predict. To facilitate policy decisions on mitigation and adaptation strategies, it is necessary to understand, quantify, and synthesize these climate-change impacts, taking into account their uncertainties. Crucial to these decisions is an understanding of how impacts in different sectors overlap, as overlapping impacts increase exposure, lead to interactions of impacts, and are likely to raise adaptation pressure. As a first step we develop herein a framework to study coinciding impacts and identify regional exposure hotspots. This framework can then be used as a starting point for regional case studies on vulnerability and multifaceted adaptation strategies. We consider impacts related to water, agriculture, ecosystems, and malaria at different levels of global warming. Multisectoral overlap starts to be seen robustly at a mean global warming of 3 degrees C above the 1980-2010 mean, with 11% of the world population subject to severe impacts in at least two of the four impact sectors at 4 degrees C. Despite these general conclusions, we find that uncertainty arising from the impact models is considerable, and larger than that from the climate models. In a low probability-high impact worst-case assessment, almost the whole inhabited world is at risk for multisectoral pressures. Hence, there is a pressing need for an increased research effort to develop a more comprehensive understanding of impacts, as well as for the development of policy measures under existing uncertainty.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3948244

Resource Description

Climate Scenario : ☒

specification of climate scenario (set of assumptions about future states related to climate)

Representative Concentration Pathway (RCP)

Representative Concentration Pathway (RCP) : RCP 8.5

Exposure : ☒

weather or climate related pathway by which climate change affects health

 Ecosystem Changes, Food/Water Security, Food/Water Security, Temperature

Geographic Feature: ☒

resource focuses on specific type of geography

 General Geographical Feature

Geographic Location: ☒

resource focuses on specific location

 Global or Unspecified

Health Impact: ☒

specification of health effect or disease related to climate change exposure

 Infectious Disease

   Infectious Disease: Vectorborne Disease

      Vectorborne Disease: Mosquito-borne Disease

      Mosquito-borne Disease: Malaria

Mitigation/Adaptation: ☒

mitigation or adaptation strategy is a focus of resource

 Adaptation

Model/Methodology: ☒

type of model used or methodology development is a focus of resource

 Exposure Change Prediction, Methodology

Resource Type: ☒

format or standard characteristic of resource

 Research Article

Timescale: ☒

time period studied

 Long-Term (>50 years)

Vulnerability/Impact Assessment: ☒

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

 A focus of content